

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A method for manufacturing a nano-tube comprising the steps of:

arranging a first electrode and a second electrode ~~in a manner~~ to be opposite to each other ~~in an air atmosphere~~, said second electrode being made of a material mainly ~~consisting of~~ including a carbon material;

applying a voltage between said first electrode and said second electrode to carry out arc discharge ~~therebetween~~ for a period of three seconds or less between said first electrode and predetermined regions of said second electrode; and

~~forming a~~ subjecting the carbon material on ~~a predetermined region~~ said predetermined regions of said second electrode ~~into a~~ to transform into the nano-tube on a surface of said second substrate at said predetermined regions due to said arc discharge.

Claim 2 (Currently Amended): ~~A~~ The method as defined in claim 1, wherein said first electrode ~~is constituted by~~ comprises a torch electrode provided at an arc torch; and

said step of ~~forming~~ subjecting said carbon material on said predetermined region of said second electrode to transform into said nano-tube on a surface of said second substrate at said predetermined regions due to said arc discharge is carried out while moving said torch electrode and second electrode relatively to each other.

Claim 3 (Currently Amended): ~~A~~ The method as defined in claim 1 or 2, wherein said second electrode is arranged on a surface of a substrate; and

said step of ~~forming~~ subjecting said carbon material on said predetermined region of said second electrode to transform into said nano-tube on a surface of said second substrate at

said predetermined regions due to said arc discharge is carried out while ~~holding~~ said substrate is positioned on a cooling member to cool said substrate through said cooling member.

Claim 4 (Currently Amended): ~~A~~ The method as defined in claim 1 or 2, wherein said step of ~~forming~~ subjecting said carbon material on said predetermined region of said second electrode to transform into said nano-tube on a surface of said second substrate at said predetermined regions due to said arc discharge is carried out while ~~surrounding~~ at least said first electrode, said second electrode and an arc discharge region between said first electrode and said second electrode is surrounded with a surrounding member.

Claim 5 (Currently Amended): ~~A~~ The method as defined in claim 1 or 2, wherein said carbon material for said second electrode is any one selected from the group consisting of graphite, carbon, activated carbon, amorphous carbon and graphite.

Claim 6 (Currently Amended): ~~A~~ The method as defined in claim 1 or 2, wherein said carbon material for said second electrode is any one selected from the group consisting of a carbon material containing a metal catalyst, that having a metal catalyst formed on a surface thereof, that containing B and a metal catalyst, that having B formed on a surface thereof and that having B and a metal catalyst formed on a surface thereof.

Claim 7 (Currently Amended): ~~A~~ The method as defined in claim 6, wherein said metal catalyst is selected from the group consisting of Li, B, Mg, Al, Si, P, S, K, Ca, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, As, Y, Zr, Nb, Mo, Rh, Pd, In, Sn, Sb, La, Hf, Ta, W,

Os, Pt, an oxide thereof, a nitride thereof, a carbide thereof, a sulfide thereof, a chloride thereof, a sulfate thereof, a nitrate thereof and a mixture thereof.

Claim 8 (Currently Amended): A The method as defined in any one of claims ~~1, 2~~ and 1 and 2, wherein said arc discharge is carried out while feeding a specific gas to a region in which said arc discharge is generated.

Claim 9 (Currently Amended): A The method as defined in claim 8, wherein said specific gas is selected from the group consisting of rare gas ~~such as~~ including Ar, and He ~~or the like~~, air, nitrogen gas, carbon dioxide gas, oxygen gas, hydrogen gas and a mixture thereof.

Claim 10 (Currently Amended): A The method as defined in claim 1 or 2, wherein said first electrode is made of a material mainly ~~consisting of~~ including graphite, activated carbon and amorphous carbon.

Claim 11 (Currently Amended): A The method as defined in claim 1 or 2, wherein said arc discharge is generated by a DC or a DC pulse; and  
said second electrode acts as an anode for said arc discharge.

Claim 12 (Currently Amended): A The method as defined in claim 1 or 2, wherein said arc discharge is generated by an AC or an AC pulse.

Claim 13 (Currently Amended): A nano-tube manufactured according to the method defined in ~~any one of claims 1 to 12~~ claim 1.

Claims 14-17 (Canceled).

Claim 18 (Currently Amended): A method for patterning a nano-tube, comprising the steps of:

arranging a first electrode and a second electrode ~~in a manner~~ to be opposite to each other ~~in an air atmosphere~~, said second electrode being made of a material mainly ~~consisting of~~ including a carbon material;

applying a voltage between said first electrode and said second electrode to generate arc discharge ~~therebetween~~ for a period of three seconds or less between said first electrode and predetermined regions of said second electrode; and

~~forming~~ subjecting a ~~the~~ carbon material on a said ~~predetermined region~~ regions of said second electrode to transform into a the nano-tube on a surface of said second substrate at said predetermined regions due to said arc discharge while moving said first electrode and second electrode relatively to each other.

Claim 19 (Currently Amended): A method for patterning a nano-tube, comprising the steps of:

arranging a first electrode and a second electrode ~~in a manner~~ to be opposite each other ~~in an air atmosphere~~, said second electrode being made of a material mainly ~~consisting of~~ including a carbon material ~~selected from the group consisting of a carbon material formed into any pattern-like shape, that containing a metal catalyst formed into any pattern-like shape and that having a metal catalyst formed into any pattern-like shape on a surface thereof~~ having a predetermined pattern;

applying a voltage between said first electrode and second electrode to generate arc discharge ~~therebetween~~ for a period of three seconds or less between said first electrode and predetermined regions of said second electrode; and

~~forming~~ subjecting a the carbon material on a predetermined region said predetermined regions of said second electrode to transform into a the nano-tube on a surface of said second substrate at said predetermined regions due to said arc discharge.

Claim 20 (Currently Amended): A method for patterning a nano-tube, comprising the steps of:

arranging a first electrode and a second electrode ~~in a manner~~ to be opposite to each other ~~in an air atmosphere;~~

arranging a mask of any opening pattern ~~on~~ to be separated from and above a surface of said second electrode;

applying a voltage between said first electrode and said second electrode to generate arc discharge ~~therebetween~~ for a period of three seconds or less between said first electrode and predetermined regions of said second electrode; and

~~forming~~ subjecting a the carbon material on a the predetermined region regions of said second electrode corresponding to said openings of said mask to transform into a the nano-tube on a surface of said second substrate at said predetermined regions due to said arc discharge.

Claim 21 (Currently Amended): A The method as defined in any one of claims 18 ~~to~~ and 20, wherein said first electrode ~~is constituted by~~ comprises a torch electrode provided at an arc torch.

Claim 22 (Currently Amended): A nano-tube material patterned according to the method defined in any one of claims 18 to ~~21~~ 20.

Claim 23 (Original): An electron emission source having the patterned nano-tube material defined in claim 22 incorporated therein.

Claim 24 (New): The method as defined in claim 19, wherein said carbon material contains a metal catalyst.

Claim 25 (New): The method as defined in claim 24, wherein said metal catalyst is formed on a surface of said carbon material.